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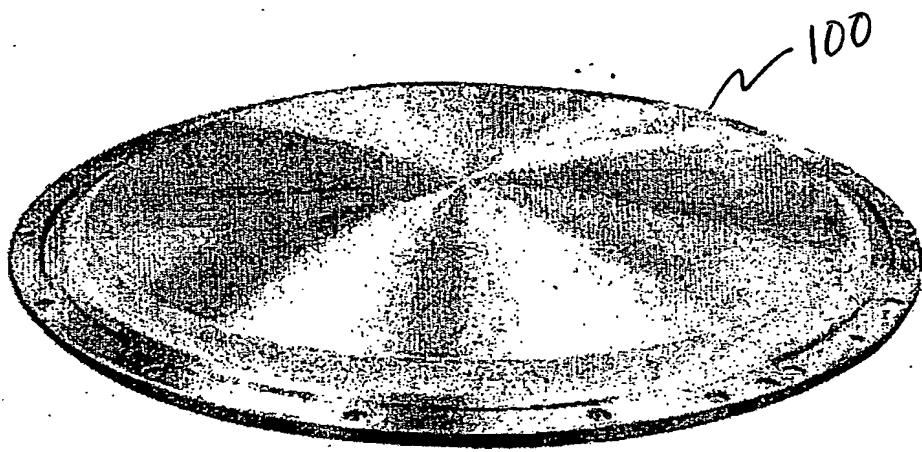


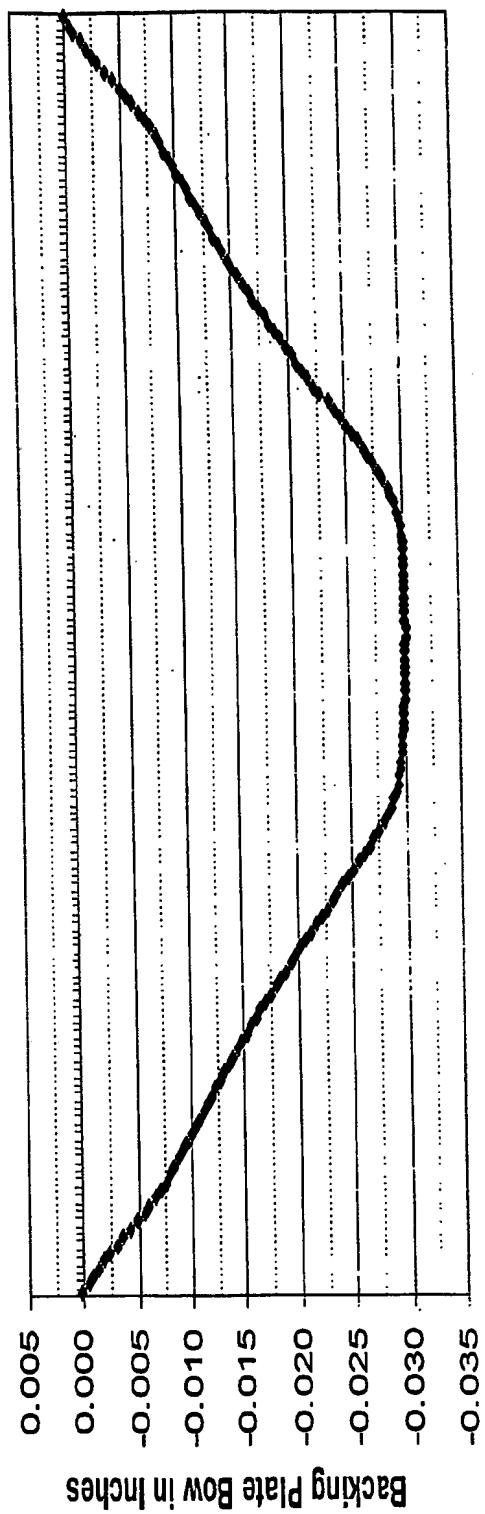
Fig 1. Photo of new target - showing original flat surface of the target and the attached backing plate.



Fig 2. Photo of a non-uniformly worn sputter target  
220 200

1051.9 kwhrs  
Maximum bow @ 0.030"

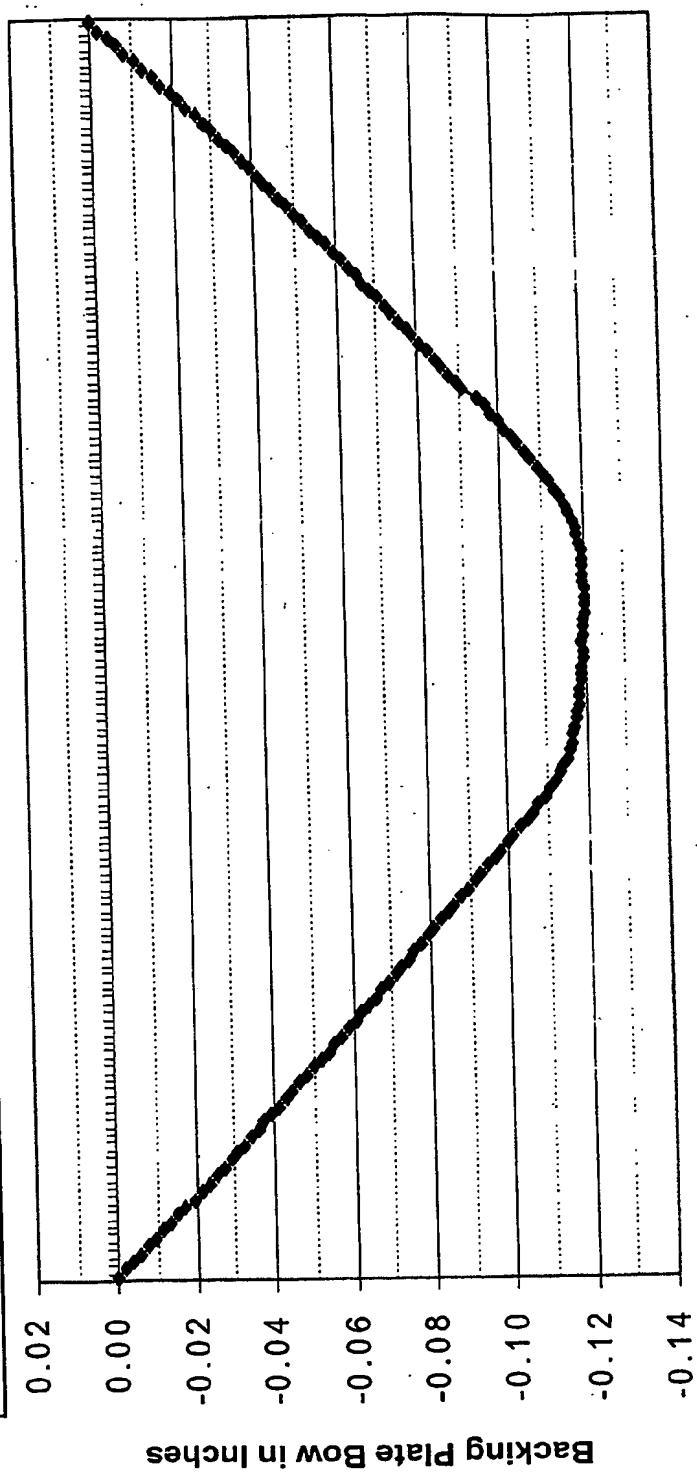
Figure 3



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850 kWhrs  
0.120" maximum bow

**Figure 4**



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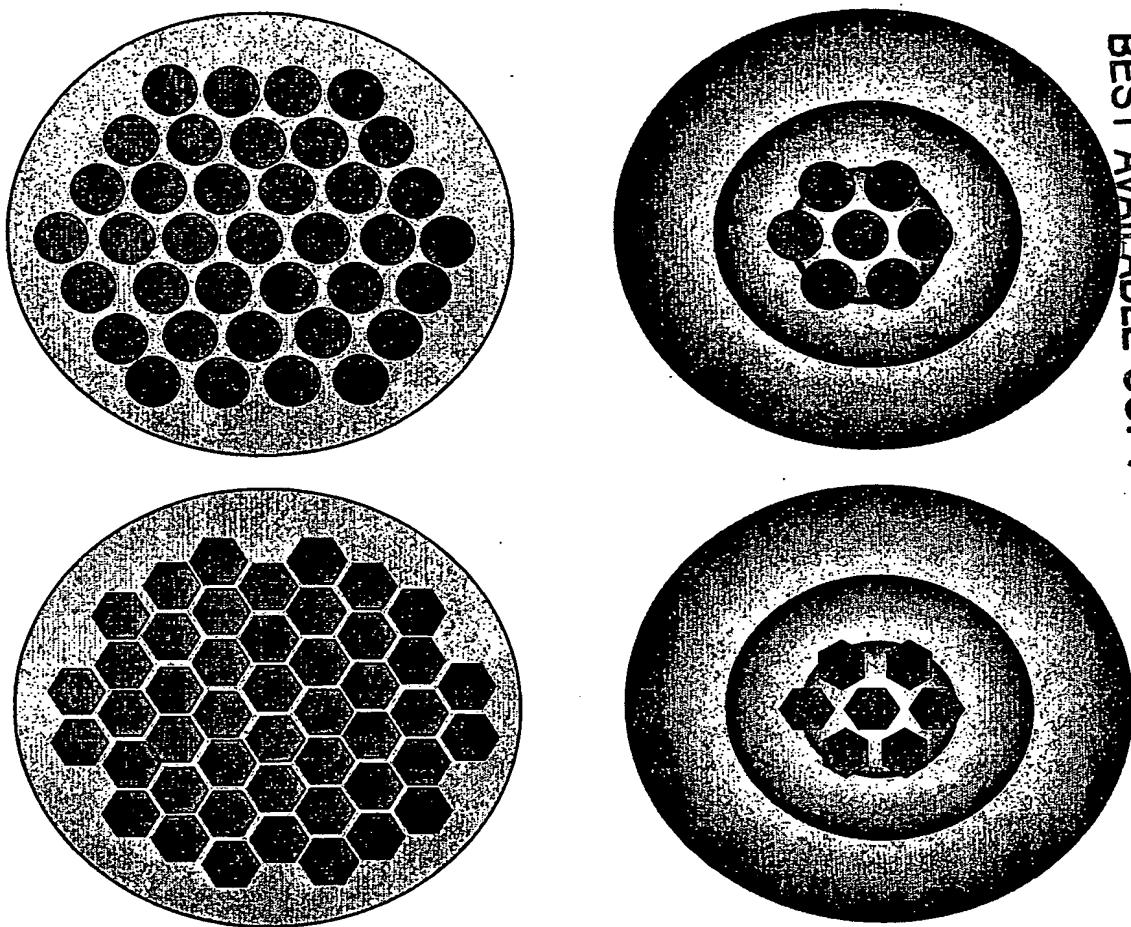
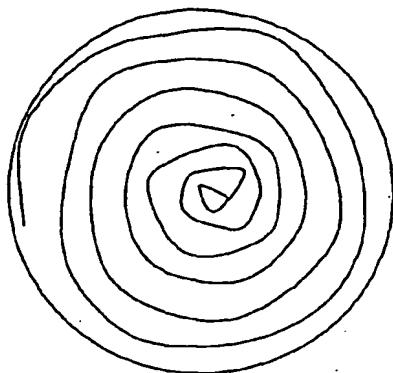
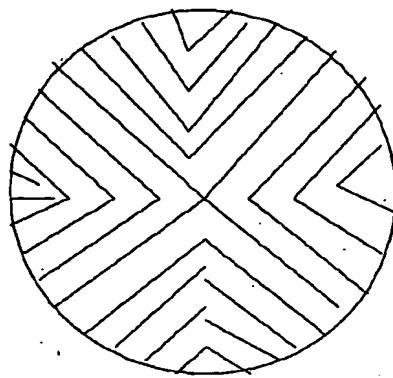


Fig. 5 showing other core backing component configurations to increase surface area by surface area modification.

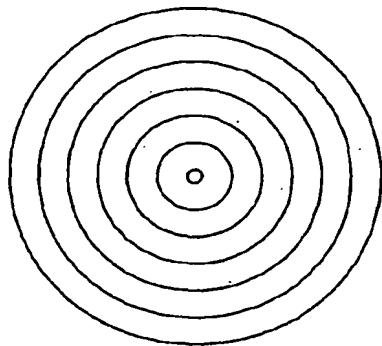
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Spiral

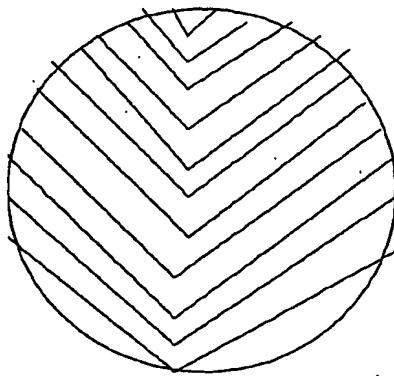


"Center" Chevron



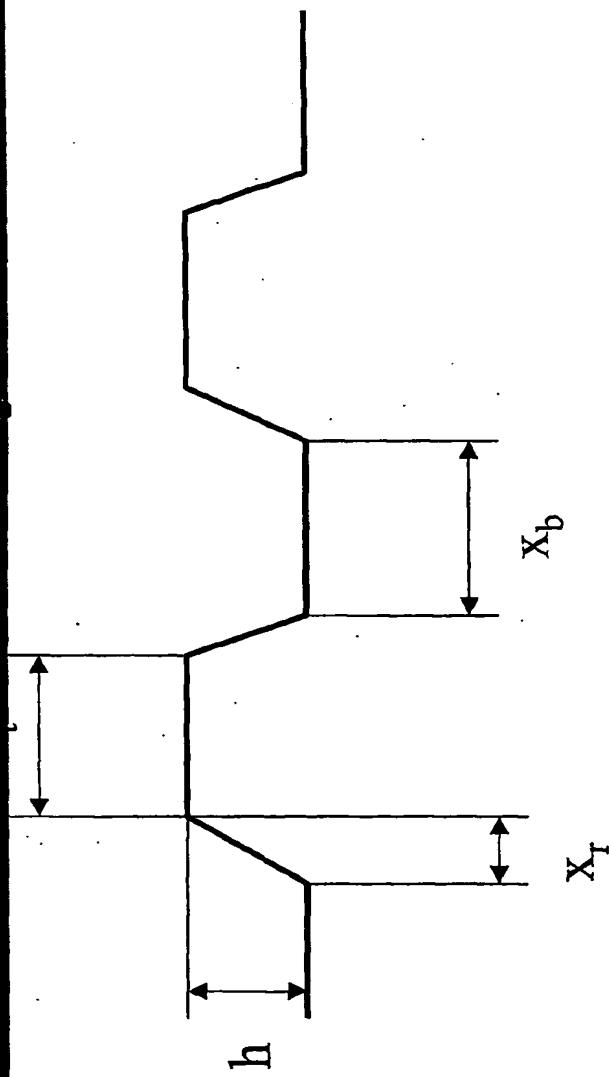
Concentric Grooves

Design #1 and #2



"Side" Chevron

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Design 1:

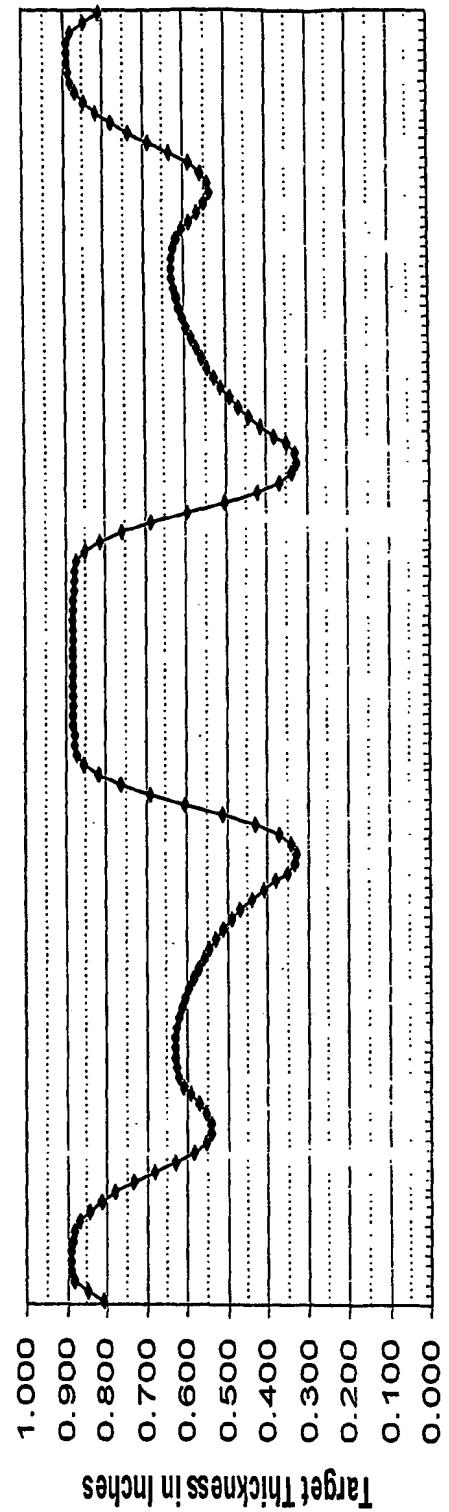
$$\begin{aligned} h &= 2.0 \text{ mm (0.08")} \\ x_t &= 3.0 \text{ mm} \\ x_b &= 3.0 \text{ mm} \\ x_t &= 1.0 \text{ mm} \end{aligned}$$

Design 2:

$$\begin{aligned} h &= 2.0 \text{ mm (0.08")} \\ x_t &= 4.0 \text{ mm} \\ x_b &= 2.0 \text{ mm} \\ x_t &= 0.5 \text{ mm} \\ (0.16") & x_b \\ (0.08") & x_t \\ (0.02") & \end{aligned}$$

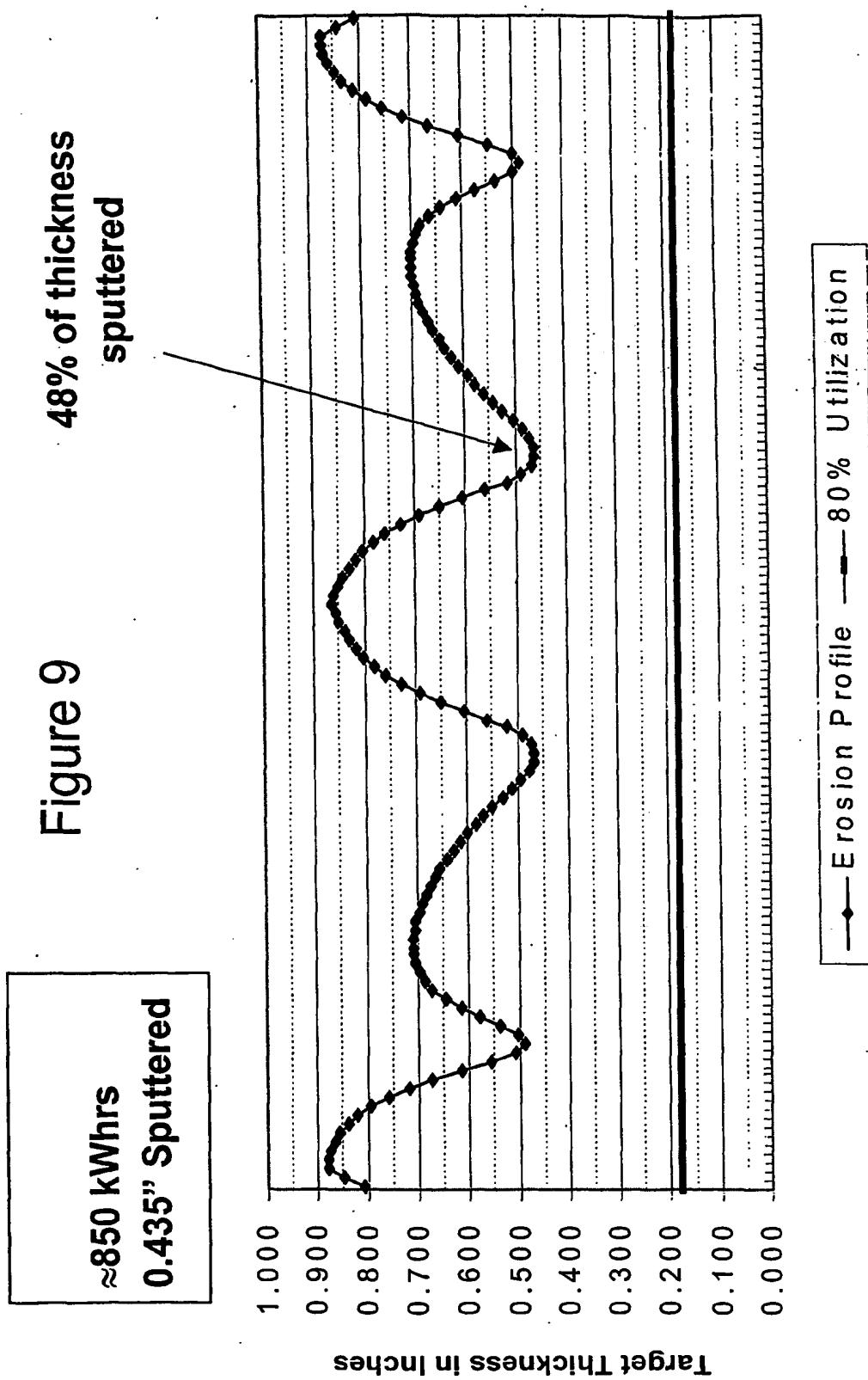
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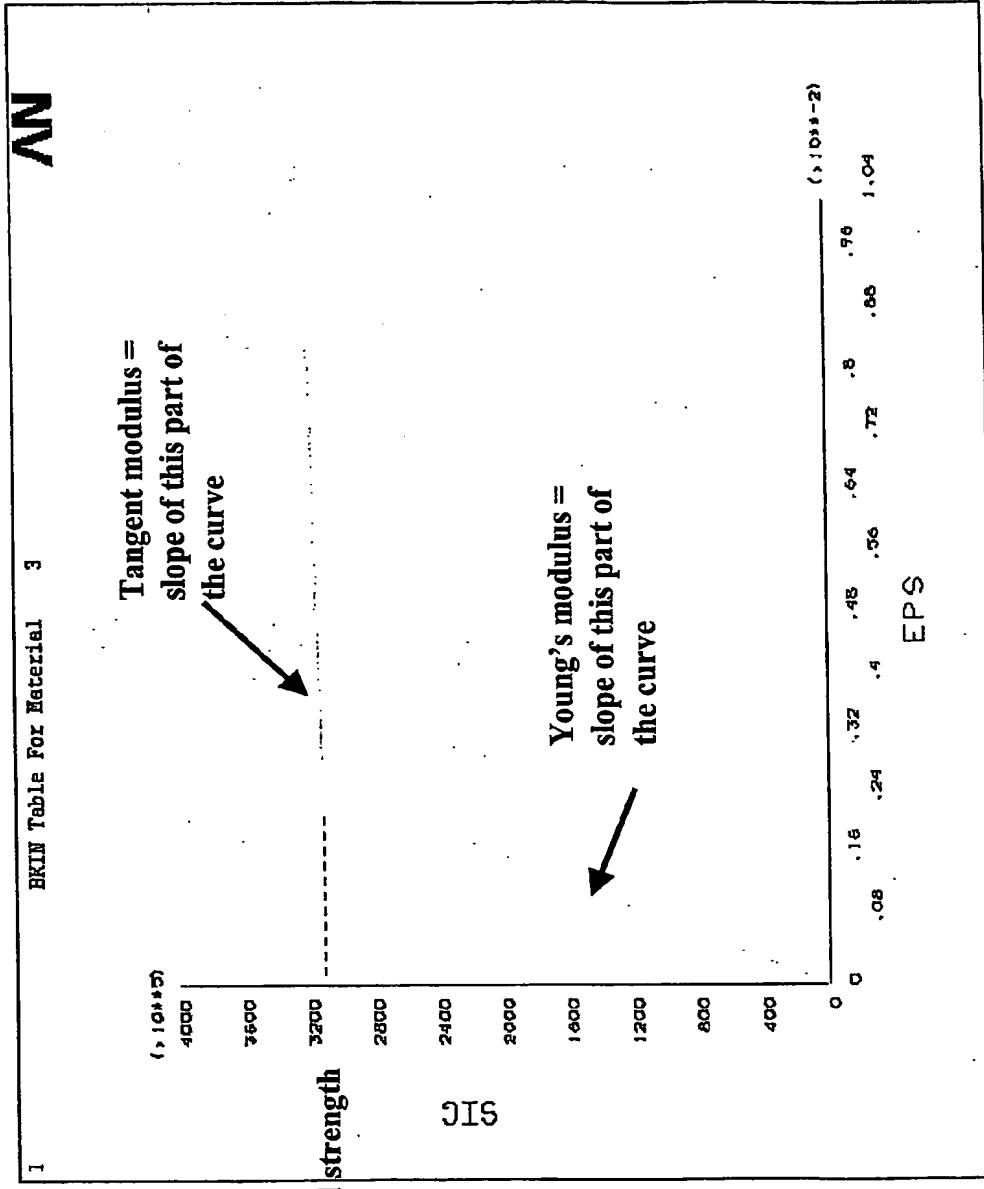
Figure 8  
Erosion Profile



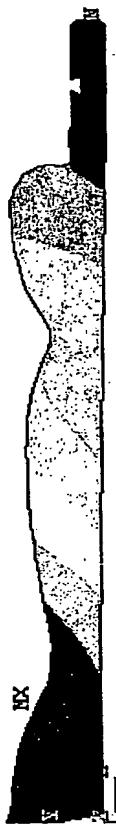
1051.9 kwhrs  
0.600" Sputtered

Figure 9





850 kWhrs  
temperature distribution:



### Monolithic - APEX

D<sub>MAX</sub> = .003093  
S<sub>MIN</sub> = 47.906  
S<sub>MAX</sub> = 166.674  
47.906  
61.103  
74.299  
87.495  
100.692  
113.888  
127.085  
140.281  
153.478  
166.674

D<sub>MAX</sub> = .002672  
S<sub>MIN</sub> = 42.832  
S<sub>MAX</sub> = 146.821  
42.832  
54.386  
65.941  
77.495  
89.049  
100.604  
112.158  
123.712  
135.267  
146.821

### Enhanced cooling design 1 - APEX

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**850 kWhrs**

temperature distribution:

 $D_{\text{MAX}} = .0003093$  $S_{\text{MIN}} = 47.906$  $S_{\text{MAX}} = 166.674$ 

47.906

61.103

74.299

87.495

100.692

113.888

127.085

140.281

153.478

166.674

**Monolithic - APEX** $D_{\text{MAX}} = .00256$  $S_{\text{MIN}} = 41.447$  $S_{\text{MAX}} = 140.181$ 

41.447

52.418

63.388

74.358

85.329

96.299

107.269

118.24

129.21

140.181

**Enhanced cooling design 2 - APEX**

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DMX = .002873

SMN = 47.906

SMX = 166.674

47.906

61.103

74.299

87.495

100.692

113.888

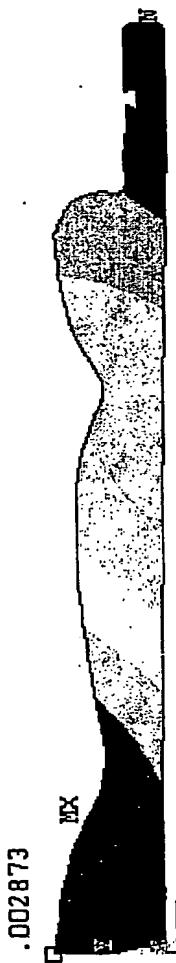
127.085

140.281

153.478

166.674

temperature distribution:

**850 kWhrs**

.002873

**Monolithic ECAE****1400 kWhrs**

DMX = .003123

SMN = 45.675

SMX = 178.473

45.675

60.43

75.186

89.941

104.696

119.452

134.207

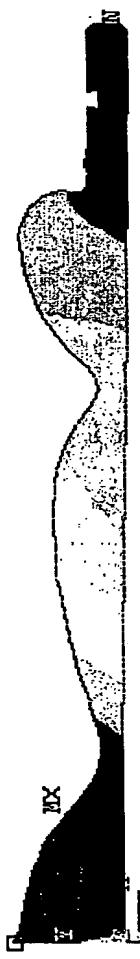
148.952

163.718

178.473

**Monolithic ECAE**

.003123



850 kWhrs

temperature distribution:



### Enhanced cooling design 2 - ECAE

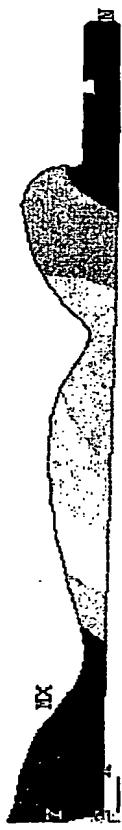


### Enhanced cooling design 2 - APEX

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**1400 kWhrs**

temperature distribution:

**Monolithic - APEX**

DMX = .0003437

SMM = 45.675

SMX = 178.473

45.675

60.43

75.186

89.941

104.696

119.452

134.207

148.962

163.718

178.473

DMX = .0003162

SMM = 39.667

51.676

63.684

75.693

87.701

99.71

111.719

123.727

135.736

147.744

**Enhanced cooling design 2 - APEX****BEST AVAILABLE COPY**